FREEDM™-32P672 DEVELOPMENT KIT PLATFORM

PRELIMINARY

ISSUE 1: DECEMBER 2000

PROPRIETARY AND CONFIDENTIAL TO PMC-SIERRA, INC., AND FOR ITS CUSTOMERS' INTERNAL USE

CONTENTS

1 INTRODUCTION 1

1.1 PURPOSE 1

1.2 SCOPE 1

1.3 APPLICATION 1

1.4 DOCUMENTATION 1

2 FEATURES 3

3 GENERAL DESCRIPTION 4

3.1 FREEDM™-32P672 DEVELOPMENT KIT PLATFORM ARCHITECTURE 4

3.1.1 THE DEVELOPMENT KIT PLATFORM CONFIGURATION 4

4 TARGET MACHINE HARDWARE CONFIGURATION 5

5 SOFTWARE 6

5.1 PMC-SIERRA DEVELOPMENT KIT DISTRIBUTION CD-ROM 6

5.2 TARGET MACHINE SOFTWARE CONFIGURATION 7

5.3 SOFTWARE INSTALLATION ON THE TARGET PLATFORM 7

5.3.1 APPLICATION SOFTWARE INSTALLATION 7

5.3.2 RUNNING THE FREEDM™-32P672 WINDOWS BASED APPLICATION 9

5.3.3 INITIAL VALIDATION TESTS 10

5.3.4 SOFTWARE SOURCE CODE INSTALLATION 11

5.3.5 SOURCE CODE DIRECTORY STRUCTURE 11

5.3.6 REBUILDING THE FREEDM™-32P672 DEVELOPMENT KIT APPLICATION 12

LIST OF FIGURES

FIGURE 1 – FREEDM™-32P672 DEVELOPMENT KIT PLATFORM 4

FIGURE 2 - AAL1GATOR-32/TEMUX DISTRIBUTION CD-ROM DIRECTORY STRUCTURE 7

FIGURE 3 – FREEDM™-32P672 STARTUP SCREEN 9

FIGURE 4 – FREEDM™-32P672 STATUS BOX 10

FIGURE 5 – "AUTOMATED SCRIPTS" MODE INITIAL VALIDATION TESTS 11

LIST OF TABLES

TABLE 1 - CONTENTS OF THE DEVELOPMENT KIT DISTRIBUTION CD-ROM 6

1 INTRODUCTION

The FREEDM™-32P672 Development Kit Platform is the hardware platform on which the PMC-Sierra FREEDM™-32P672 Development Kit board and application software can be tested and verified. This development platform will enable PMC-Sierra's customers to dramatically reduce their application software development cycle.

The FREEDM™-32P672 Development Kit consist of:

- FREEDM™-32P672 Development Kit Board
- FREEDM™-32P672 Development Kit software and documentation on the accompanying CD-ROM

Please note that:

- The Pentium-based PC is not supplied by PMC-Sierra. The PC platform and its hardware and software configuration are the user's responsibility.
- The source code on the FREEDM™-32P672 Development Kit Platform CD-ROM is distributed "as is".

1.1 Purpose

This document provides a system design specification for the FREEDM™-32P672 Development Kit Platform.

1.2 Scope

This document describes the hardware and software requirements of the FREEDM™-32P672 Development Kit Platform without going into the specifics of the PMC-Sierra FREEDM™-32P672 Development Kit board. This document describes the FREEDM™-32P672 Development Kit Platform in the level of detail required to configure and run the system. This document also contains a detailed software installation procedure.

1.3 Application

This document is designed for embedded systems development based on the functionality of the PMC-Sierra device included in this design, namely the FREEDM™-32P672.

1.4 Documentation

The FREEDM™-32P672 Development Kit CD includes a documentation directory containing relevant PMC-Sierra documentation. This documentation is current of the date of those documents publication. For

up-to-date PMC-Sierra documentation refer to the PMC-Sierra website at www.pmc-sierra.com. The documents included on the CD are:

Frame Engine and Data Link Manager 32P672 Data Sheet
FREEDM-32P672 Frame Engine and Data Link Manager Short Form Data Sheet
FREEDM-32P672 Programmer's Guide
FREEDM Technical Overview
PM7380 FREEDM-32P672 Revision C Device Errata
FREEDM-32P672 PCI Bus Utilization and Latency Analysis
Answers To Frequently Asked Questions Regarding The FREEDM-32P672, FREEDM-84P672, FREEDM-32A672 AND FREEDM-84A672
FREEDM-32P672 Development Kit Platform (this document)
FREEDM-32P672 Development Kit Short Form Data Sheet
FREEDM-32P672 Development Kit Installation Guide
FREEDM-32P672 Development Kit Board User Manual
FREEDM-32P672 Development Kit Board Design Document
Customer Registration Form
Packing List

2 FEATURES

- Jump-start development. Right out of the box the user can test the features of the FREEDM™-32P672 Development Kit board and the application software supplied by PMC-Sierra. With the supplied software and the evaluation board, the customers can immediately start developing their own applications.
- Windows 95/98 compatible.
- Graphical User Interface (GUI) allows quick point and click access to complex operations.
- Includes a searchable help file for fast and easy access to the quick reference guide.
- FREEDM™-32P672 device can be configured automatically for various tests (Automatic Mode). As an alternative, the software provides a Manual Mode testing to allow the user to exercise more control over FREEDM™-32P672 configuration.
- Provides an extensive statistics gathering facility to allow the user to quickly analyze the board performance.

3 GENERAL DESCRIPTION

3.1 FREEDM™-32P672 Development Kit Platform Architecture

The FREEDM™-32P672 Development Kit Platform is the standalone Intel Pentium based machine.

3.1.1 The Development Kit Platform Configuration

The Standalone Development Kit Platform consists of one component:

- Target Machine

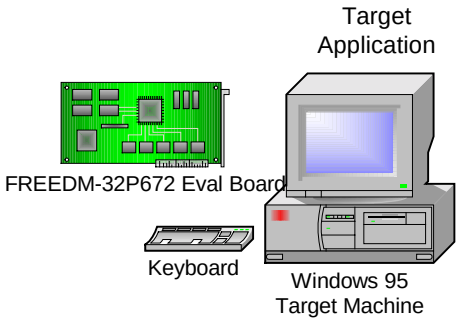

Figure 1 – FREEDM™-32P672 Development Kit Platform

This standalone system has all the capabilities to allow full functionality testing of the FREEDM™-32P672 Development Kit Board.

4 TARGET MACHINE HARDWARE CONFIGURATION

The target machine must have the following minimum hardware configuration:

- Intel Pentium based motherboard (minimum 233MHz) with one free PCI slot (for the development kit board).
- CD-ROM Drive
- Hard Disk Drive with at least 6MB of free disk space
- Standard keyboard
- Standard mouse
- VGA Video Adapter
- VGA Compatible Monitor

5 SOFTWARE

The current version of the PMC-Sierra supplied software for the FREEDM™-32P672 Development kit only supports installation and execution on the Windows 95 and Windows 98 operating systems. Please, check the PMC-Sierra website at www.pmc-sierra.com for the latest upgrades and support for the other operating systems.

5.1 PMC-Sierra Development Kit Distribution CD-ROM

The Development Kit distribution CD-ROM contains all of the necessary documentation and software required for the target platform. Once installed, the target system is fully functional and ready to run.

Directory Item	Comment
(D:)	Root directory of the distribution CD-ROM.
/DOC	Location of all the required documentation.
/SOFTWARE	Root directory of the distributed software.
/SOFTWARE/ TARGET	Root directory of the software for the target system.
/SOFTWARE/ TARGET/BIN	Root directory of the software binaries required for the target system.
/SOFTWARE/ TARGET/BIN/OS	Root directory of the target system operating system.
/SOFTWARE/ TARGET/BIN/OS/ WIN95	Directory where the Win95 installation binaries has been located.
/SOFTWARE/ TARGET/ SOURCE	Root directory of the source code.
/SOFTWARE/ TARGET/ SOURCE/ FREEDM32	FREEDM™-32P672 development kit source code root directory. It is in the form of a ZIP file. The ZIP file contains directory structure of the supplied source code.

Table 1 - Contents of the Development Kit Distribution CD-ROM

ZIP/UNZIP utilities are downloadable for free from a number of Internet sites. The ZIP files on the distribution CD-ROM (like the source code) contain a directory structure. The user should unzip the files into the desired root directory and the necessary directory structure will be created.

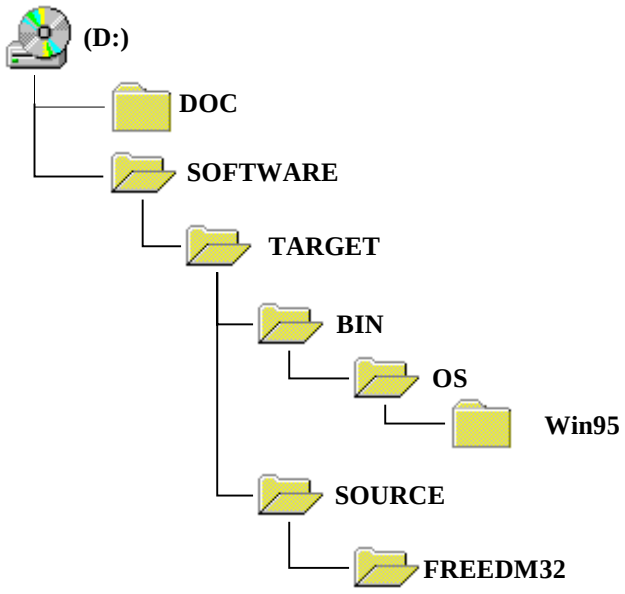

Figure 2 - AAL1GATOR-32/TEMUX Distribution CD-ROM Directory Structure

5.2 Target Machine Software Configuration

The software required for the system startup and the operation must be installed on the target machine hard drive.

5.3 Software Installation On the Target Platform

The installation process is based on standard InstallShield® for Microsoft Visual C++ 6. There should be no need to alter the installation options in most cases.

5.3.1 Application software installation

On Windows 95 or Windows 98:

- Place installation CD-ROM supplied with the FREEDM™-32P672 Development Kit into the target system CD-ROM drive
- Select Run from the Taskbar Start menu
- Type the full name of the file: `d:\software\target\bin\os\win95\setup.exe` and click OK. The assumption is that d: is the drive letter of the CD-ROM drive.
- During the installation process, the user should follow the instructions on the screen.

- At the end of the application software installation the user should accept the option to reboot. The changes won't be in effect until the target machine has been rebooted.
- Remove the installation CD-ROM.
- Once the target machine is in the booting phase please, power down the system and insert the FREEDM™-32P672 Development Kit board into the available PCI slot.
- Power up the target machine.
- Once restarted, Windows will display the following message: "New hardware found". After that the "Update Device Driver Wizard" dialog box will appear.
- Select: "Next" | "Other Locations" | "Finish". At this point the Windows 95/98 device driver for FREEDM™-32P672 is not completely installed.
- Once Windows finishes booting, right click on "My Computer" and select "Properties".
- Select the "Device Manager" tab
- Find "Other Devices" on the list and click on the '+' sign next to it.
- Select "PCI Network Controller" and click on "Properties".
- Click on the "Driver" tab and click on "Update Driver…".
- Once "Update Device Driver Wizard" dialog shows up select "No, select driver from list" and click "Next".
- From the list of devices select "Other devices" and click "Next".
- Select "PMC-Sierra" under "Manufacturers" column and FREEDM™-32P672 under Models column and click finish.
- If you are asked to insert the disk click OK.
- The Windows Wizard will warn the user that it can't find the disk. In the "Copy Files From:" field type: `c:\windows\system` and click OK (assuming that user installed Windows in the c:\windows directory).
- Click on "Close" in the "FREEDM32P672 Properties" dialog.
- Click on "Close" in the "System Properties" dialog.

The FREEDM™-32P672 Development Kit is now completely installed and ready to run.

5.3.2 Running the FREEDM™-32P672 Windows Based Application

After the software is installed, the user can immediately start running the FREEDM™-32P672 application.

If the default settings have been chosen during the installation process the FREEDM™-32P672 application software has been installed in the c:\Program Files\PMC-Sierra, Inc\Freedm-32P672 Development Kit directory.

To run the application, select “Programs” from the Taskbar Start menu, then select “Freedm-32P672 Development Kit” and click on “Freedm32”. The startup screen will appear:

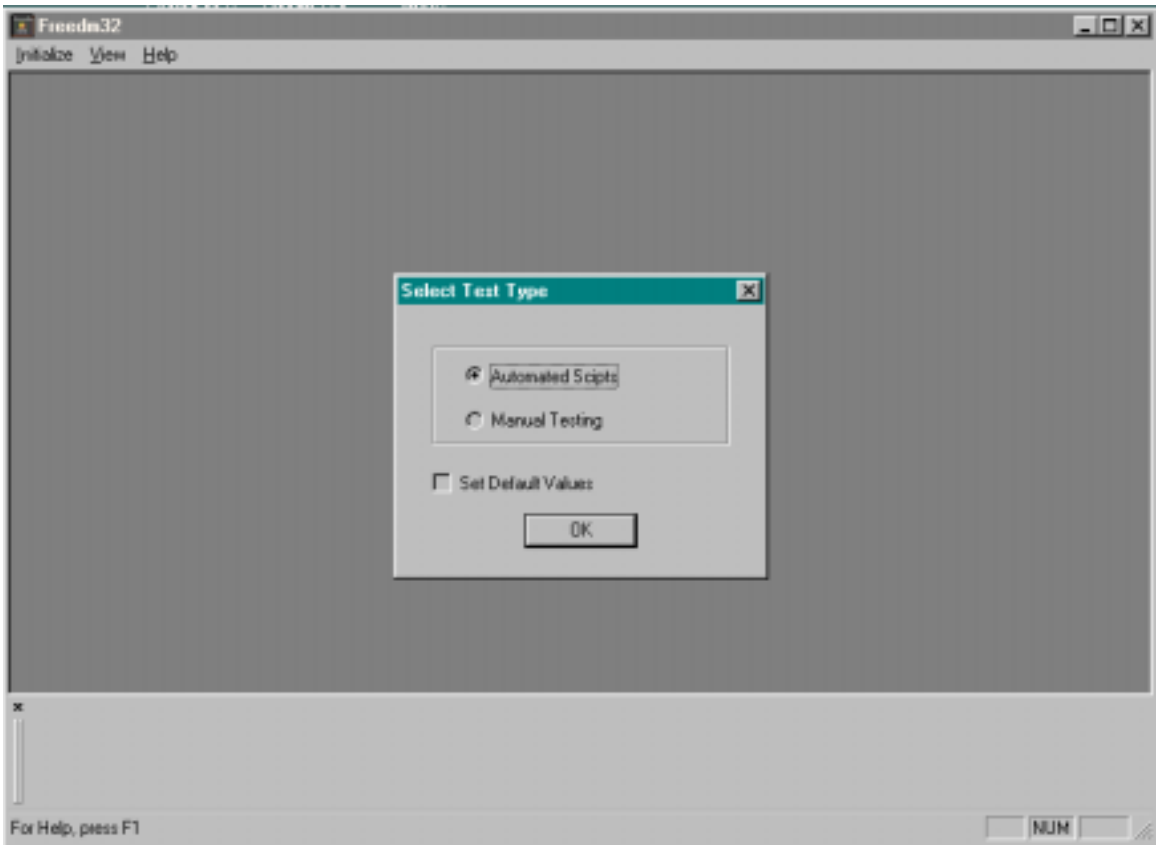

Figure 3 – FREEDM™-32P672 Startup Screen

The user has the option to select:

- **Automated Scripts**. This is a set of predefined, automated test procedures that can’t be changed by the user.
- **Manual Testing**. The user can configure the FREEDM™-32P672 device manually.

Figure 4 – FREEDM™-32P672 Status Box

After the selection has been made, the main screen will appear. At the bottom of the screen the user can see the application status messages.

5.3.3 Initial Validation Tests

The user can run the following initial tests to make sure that the PCI interface with the FREEDM™-32P672 Development Board is working properly:

- Channel Loopback
- Register Tests
- Internal Memory Test

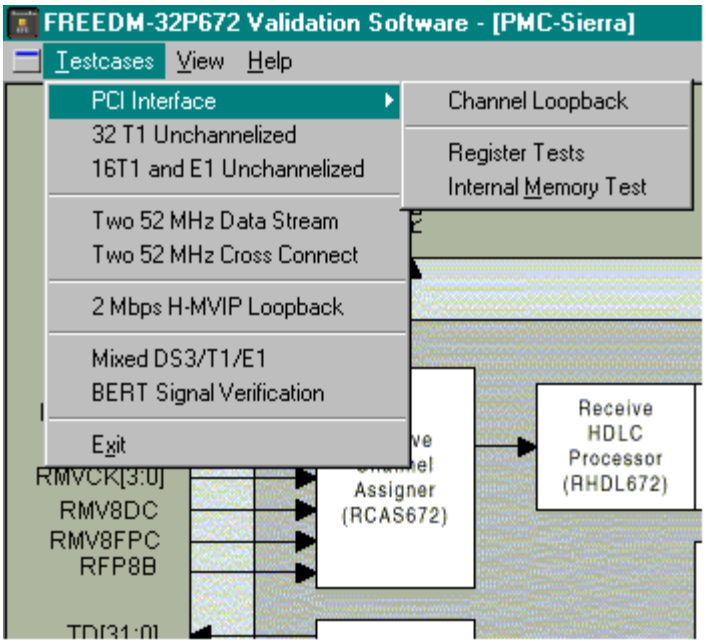

Figure 5 – "Automated Scripts" mode initial validation tests

Before running the "Channel Loopback" test, please make sure that the FREEDM™-32P672 development board is configured for internal loopback mode. Please, refer to the users manual for more information how to configure the board for the "Channel Loopback" test.

The results of the tests will show up in the message box at the bottom of the main application screen.

5.3.4 Software Source Code Installation

The FREEDM™-32P672 Development Kit application software source code is distributed in the form of the zip compressed file. It contains all the necessary source code files needed to rebuild the FREEDM™-32P672 development kit application.

PMC-Sierra, Inc. does not supply the tools required to rebuild the FREEDM™-32P672 Development Kit application.

The source code is located in the .\software\target\source\freedm32 subdirectory on the distribution CD-ROM.

The distribution ZIP file contains the FREEDM™-32P672 source code directory structure.

5.3.5 Source Code Directory Structure

5.3.5.1 FREEDM™-32P672 Chip Driver Source Files

The source files for the chip driver are located in the .\FreedmDriver subdirectory. The source code specific to the FREEDM™-32P672 device is located here.

5.3.5.2 FREEDM™-32P672 PCI Driver Source Files

The source files for the PCI bus driver are located in the .\Pcidriver subdirectory. The source code specific to the Intel Pentium PCI and Windows 95/98 platform are located here.

5.3.5.3 FREEDM™-32P672 Online Help Source Files

The help source files are located in the .\Onlinehelp subdirectory.

5.3.5.4 FREEDM™-32P672 Application Source Files

The main application source files are located in the .\Validation subdirectory.

5.3.6 Rebuilding the FREEDM™-32P672 Development Kit Application

All the source files necessary to rebuild the whole application are located on the distribution CD-ROM. The tools that should be used are:

- **Microsoft Visual C++ version 6.0**. The chip driver source files and the main application source files are compiled with this tool. The output of the chip driver source files build is Freedm32.dll and the main application build output is Freedm32.exe . Both builds can be done from within the Visual C++ IDE.

- **Microsoft Macro Assembler version 6.11c**. The PCI driver source files are compiled with this tool. The output of the build is Freedm32.vxd (standard Windows 95/98 device driver). Microsoft's NMAKE is used in the build process. The user should start the build process by typing "NMAKE" in the DOS command window while in the Windows 95/98 environment. This must be done from within the .\Pcidriver subdirectory.

- **AnetHelpTool version 5.0.0.24**. This tool has been used to build FREEDM™-32P672 development kit help files.

NOTES

CONTACTING PMC-SIERRA, INC.

PMC-Sierra, Inc.
8555 Baxter Place Burnaby, BC
Canada V5A 4V7

Tel: (604) 415-6000

Fax: (604) 415-6200

Document Information: document@pmc-sierra.com
Corporate Information: info@pmc-sierra.com
Application Information: apps@pmc-sierra.com
(604) 415-4533
Web Site: http://www.pmc-sierra.com

None of the information contained in this document constitutes an express or implied warranty by PMC-Sierra, Inc. as to the sufficiency, fitness or suitability for a particular purpose of any such information or the fitness, or suitability for a particular purpose, merchantability, performance, compatibility with other parts or systems, of any of the products of PMC-Sierra, Inc., or any portion thereof, referred to in this document. PMC-Sierra, Inc. expressly disclaims all representations and warranties of any kind regarding the contents or use of the information, including, but not limited to, express and implied warranties of accuracy, completeness, merchantability, fitness for a particular use, or non-infringement.

In no event will PMC-Sierra, Inc. be liable for any direct, indirect, special, incidental or consequential damages, including, but not limited to, lost profits, lost business or lost data resulting from any use of or reliance upon the information, whether or not PMC-Sierra, Inc. has been advised of the possibility of such damage.

© 2000 PMC-Sierra, Inc.

PMC-2001837 Issue date: December 2000